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#20

SEQUENCE LISTING

<110> Hilton, Douglas J.  
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Nicholson, Sandra E.  
Metcalf, Donald  
Nicola, Nicos A.



<120> THERAPEUTIC AND DIAGNOSTIC AGENTS

<130> Davies Collison Cave

<140> 08/962,560

<141> 1997-10-31

<160> 68

<170> PatentIn Ver. 2.1

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<213> Artificial Sequence

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<223> Description of Artificial Sequence:Primer

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gacgctatgg cccacccctc cagctggccc ctcgagtagg 160  
atg gta gca cgc aac cag gtg gca gcc gac aat gcg atc tcc ccg gca 208  
Met Val Ala Arg Asn Gln Val Ala Ala Asp Asn Ala Ile Ser Pro Ala  
1 5 10 15  
gca gag ccc cga cgg cgg tca gag ccc tcc tcg tcc tcg tct tcg tcc 256  
Ala Glu Pro Arg Arg Arg Ser Glu Pro Ser Ser Ser Ser Ser Ser Ser  
20 25 30  
tcg cca gcg gcc ccc gtg cgt ccc cgg ccc tgc ccg gcg gtc cca gcc 304  
Ser Pro Ala Ala Pro Val Arg Pro Arg Pro Cys Pro Ala Val Pro Ala  
35 40 45  
cca gcc cct ggc gac act cac ttc cgc acc ttc cgc tcc cac tcc gat 352  
Pro Ala Pro Gly Asp Thr His Phe Arg Thr Phe Arg Ser His Ser Asp  
50 55 60  
tac cgg cgc atc acg cgg acc agc gcg ctc ctg gac gcc tgc ggc ttc 400  
Tyr Arg Arg Ile Thr Arg Thr Ser Ala Leu Leu Asp Ala Cys Gly Phe  
65 70 75 80  
tat tgg gga ccc ctg agc gtg cac ggg gcg cac gag cgg ctg cgt gcc 448  
Tyr Trp Gly Pro Leu Ser Val His Gly Ala His Glu Arg Leu Arg Ala  
85 90 95  
gag ccc gtg ggc acc ttc ttg gtg cgc gac agt cgt caa cgg aac tgc 496  
Glu Pro Val Gly Thr Phe Leu Val Arg Asp Ser Arg Gln Arg Asn Cys  
100 105 110  
ttc ttc gcg ctc agc gtg aag atg gct tcg ggc ccc acg agc atc cgc 544  
Phe Phe Ala Leu Ser Val Lys Met Ala Ser Gly Pro Thr Ser Ile Arg  
115 120 125  
gtg cac ttc cag gcc ggc cgc ttc cac ttg gac ggc agc cgc gag acc 592  
Val His Phe Gln Ala Gly Arg Phe His Leu Asp Gly Ser Arg Glu Thr  
130 135 140  
ttc gac tgc ctt ttc gag ctg ctg gag cac tac gtg gcg gcg ccg cgc 640  
Phe Asp Cys Leu Phe Glu Leu Leu Glu His Tyr Val Ala Ala Pro Arg  
145 150 155 160  
cgc atg ttg ggg gcc ccg ctg cgc cag cgc cgc gtg cgg ccg ctg cag 688  
Arg Met Leu Gly Ala Pro Leu Arg Gln Arg Arg Val Arg Pro Leu Gln  
165 170 175  
gag ctg tgt cgc cag cgc atc gtg gcc gcc gtg ggt cgc gag aac ctg 736  
Glu Leu Cys Arg Gln Arg Ile Val Ala Ala Val Gly Arg Glu Asn Leu  
180 185 190  
gcg cgc atc cct ctt aac ccg gta ctc cgt gac tac ctg agt tcc ttc 784

Ala Arg Ile Pro Leu Asn Pro Val Leu Arg Asp Tyr Leu Ser Ser Phe  
 195 200 205

ccc ttc cag atc tga ccggctg ccgctgtgcc gcagcattaa gtgggggcgc 836  
 Pro Phe Gln Ile  
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cttattatatt cttattatta attattatta tttttctgga accacgtggg agccctcccc 896  
 gcctgggtcg gagggagtgg ttgtggaggg tgagatgcct cccacttctg gctggagacc 956  
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 <211> 212  
 <212> PRT  
 <213> Mus musculus

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 35 40 45  
 Pro Ala Pro Gly Asp Thr His Phe Arg Thr Phe Arg Ser His Ser Asp  
 50 55 60  
 Tyr Arg Arg Ile Thr Arg Thr Ser Ala Leu Leu Asp Ala Cys Gly Phe  
 65 70 75 80  
 Tyr Trp Gly Pro Leu Ser Val His Gly Ala His Glu Arg Leu Arg Ala  
 85 90 95  
 Glu Pro Val Gly Thr Phe Leu Val Arg Asp Ser Arg Gln Arg Asn Cys  
 100 105 110  
 Phe Phe Ala Leu Ser Val Lys Met Ala Ser Gly Pro Thr Ser Ile Arg  
 115 120 125  
 Val His Phe Gln Ala Gly Arg Phe His Leu Asp Gly Ser Arg Glu Thr  
 130 135 140

Phe Asp Cys Leu Phe Glu Leu Leu Glu His Tyr Val Ala Ala Pro Arg  
 145 150 155 160  
 Arg Met Leu Gly Ala Pro Leu Arg Gln Arg Arg Val Arg Pro Leu Gln  
 165 170 175  
 Glu Leu Cys Arg Gln Arg Ile Val Ala Ala Val Gly Arg Glu Asn Leu  
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 195 200 205  
 Pro Phe Gln Ile  
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 gctcggggcga ccagctgtct gggacgtggt gactcatctc cc atg acc ctg cgg 234  
 Met Thr Leu Arg  
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 tgc ctg gag ccc tcc ggg aat gga gcg gac agg acg cgg agc cag tgg 282  
 Cys Leu Glu Pro Ser Gly Asn Gly Ala Asp Arg Thr Arg Ser Gln Trp  
 5 10 15 20  
 ggg acc gcg ggg ttg ccg gag gaa cag tcc ccc gag gcg gcg cgt ctg 330  
 Gly Thr Ala Gly Leu Pro Glu Glu Gln Ser Pro Glu Ala Ala Arg Leu  
 25 30 35  
 gcg aaa gcc ctg cgc gag ctc agt caa aca gga tgg tac tgg gga agt 378  
 Ala Lys Ala Leu Arg Glu Leu Ser Gln Thr Gly Trp Tyr Trp Gly Ser  
 40 45 50  
 atg act gtt aat gaa gcc aaa gag aaa tta aaa gag gct cca gaa gga 426  
 Met Thr Val Asn Glu Ala Lys Glu Lys Leu Lys Glu Ala Pro Glu Gly  
 55 60 65  
 act ttc ttg att aga gat agt tcg cat tca gac tac cta cta act ata 474  
 Thr Phe Leu Ile Arg Asp Ser Ser His Ser Asp Tyr Leu Leu Thr Ile  
 70 75 80

tcc gtt aag acg tca gct gga ccg act aac ctg cgg att gag tac caa	522
Ser Val Lys Thr Ser Ala Gly Pro Thr Asn Leu Arg Ile Glu Tyr Gln	
85 90 95 100	
gat ggg aaa ttc aga ttg gat tct atc ata tgt gtc aag tcc aag ctt	570
Asp Gly Lys Phe Arg Leu Asp Ser Ile Ile Cys Val Lys Ser Lys Leu	
105 110 115	
aaa cag ttt gac agt gtg gtt cat ctg att gac tac tat gtc cag atg	618
Lys Gln Phe Asp Ser Val Val His Leu Ile Asp Tyr Tyr Val Gln Met	
120 125 130	
tgc aag gat aaa cgg aca ggc cca gaa gcc cca cgg aat ggg act gtt	666
Cys Lys Asp Lys Arg Thr Gly Pro Glu Ala Pro Arg Asn Gly Thr Val	
135 140 145	
cac ctg tac ctg acc aaa cct ctg tat aca tca gca ccc act ctg cag	714
His Leu Tyr Leu Thr Lys Pro Leu Tyr Thr Ser Ala Pro Thr Leu Gln	
150 155 160	
cat ttc tgt cga ctc gcc att aac aaa tgt acc ggt acg atc tgg gga	762
His Phe Cys Arg Leu Ala Ile Asn Lys Cys Thr Gly Thr Ile Trp Gly	
165 170 175 180	
ctg cct tta cca aca aga cta aaa gat tac ttg gaa gaa tat aaa ttc	810
Leu Pro Leu Pro Thr Arg Leu Lys Asp Tyr Leu Glu Glu Tyr Lys Phe	
185 190 195	
cag gta taagtatttc tctctctttt tcgttttttt ttaaaaaaaaa aaaaacacat	866
Gln Val	
gcctcatata gactatctcc gaatgcagct atgtgaaaga gaaccagag gccctcctct	926
ggataactgc gcagaattct ctcttaagga cagttgggct cagtctaact taaagggtgtg	986
aagatgtagc taggtatttt aaagttcccc ttaggtagtt ttagctgaat gatgctttct	1046
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35 40 45

Tyr Trp Gly Ser Met Thr Val Asn Glu Ala Lys Glu Lys Leu Lys Glu  
50 55 60

Ala Pro Glu Gly Thr Phe Leu Ile Arg Asp Ser Ser His Ser Asp Tyr  
65 70 75 80

Leu Leu Thr Ile Ser Val Lys Thr Ser Ala Gly Pro Thr Asn Leu Arg  
85 90 95

Ile Glu Tyr Gln Asp Gly Lys Phe Arg Leu Asp Ser Ile Ile Cys Val  
100 105 110

Lys Ser Lys Leu Lys Gln Phe Asp Ser Val Val His Leu Ile Asp Tyr  
115 120 125

Tyr Val Gln Met Cys Lys Asp Lys Arg Thr Gly Pro Glu Ala Pro Arg  
130 135 140

Asn Gly Thr Val His Leu Tyr Leu Thr Lys Pro Leu Tyr Thr Ser Ala  
145 150 155 160

Pro Thr Leu Gln His Phe Cys Arg Leu Ala Ile Asn Lys Cys Thr Gly  
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Glu Tyr Lys Phe Gln Val  
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<222> (18)..(695)

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Met Ser Arg Pro Leu Asp Thr Ser Leu Arg Leu Lys Thr Phe Ser Ser  
15 20 25

aaa agc gag tac cag ctg gtg gtg aac gcc gtg cgc aag ctg cag gag 146  
Lys Ser Glu Tyr Gln Leu Val Val Asn Ala Val Arg Lys Leu Gln Glu  
30 35 40

agc gga ttc tac tgg agc gcc gtg acc ggc ggc gag gcg aac ctg ctg	194
Ser Gly Phe Tyr Trp Ser Ala Val Thr Gly Gly Glu Ala Asn Leu Leu	
45 50 55	
ctc agc gcc gag ccc gcg ggc acc ttt ctt atc cgc gac agc tcg gac	242
Leu Ser Ala Glu Pro Ala Gly Thr Phe Leu Ile Arg Asp Ser Ser Asp	
60 65 70 75	
cag cgc cac ttc ttc acg ttg agc gtc aag acc cag tcg ggg acc aag	290
Gln Arg His Phe Phe Thr Leu Ser Val Lys Thr Gln Ser Gly Thr Lys	
80 85 90	
aac cta cgc atc cag tgt gag ggg ggc agc ttt tcg ctg cag agt gac	338
Asn Leu Arg Ile Gln Cys Glu Gly Ser Phe Ser Leu Gln Ser Asp	
95 100 105	
ccc cga agc acg cag cca gtt ccc cgc ttc gac tgt gta ctc aag ctg	386
Pro Arg Ser Thr Gln Pro Val Pro Arg Phe Asp Cys Val Leu Lys Leu	
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gtg cac cac tac atg ccg cct cca ggg acc ccc tcc ttt tct ttg cca	434
Val His His Tyr Met Pro Pro Gly Thr Pro Phe Ser Leu Pro	
125 130 135	
ccc acg gaa ccc tcg tcc gaa gtt ccg gag cag cca cct gcc cag gca	482
Pro Thr Glu Pro Ser Ser Glu Val Pro Glu Gln Pro Pro Ala Gln Ala	
140 145 150 155	
ctc ccc ggg agt acc ccc aag aga gct tac tac atc tat tct ggg ggc	530
Leu Pro Gly Ser Thr Pro Lys Arg Ala Tyr Tyr Ile Tyr Ser Gly Gly	
160 165 170	
gag aag att ccg ctg gta ctg agc cga cct ctc tcc tcc aac gtg gcc	578
Glu Lys Ile Pro Leu Val Leu Ser Arg Pro Leu Ser Ser Asn Val Ala	
175 180 185	
acc ctc cag cat ctt tgt cgg aag act gtc aac ggc cac ctg gac tcc	626
Thr Leu Gln His Leu Cys Arg Lys Thr Val Asn Gly His Leu Asp Ser	
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tat gag aaa gtg acc cag ctg cct gga ccc att cgg gag ttc ctg gat	674
Tyr Glu Lys Val Thr Gln Leu Pro Gly Pro Ile Arg Glu Phe Leu Asp	
205 210 215	
cag tat gat gct cca ctt taaggagcaa aagggtcaga ggggggcctg	722
Gln Tyr Asp Ala Pro Leu	
220 225	
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 Thr Leu Ser Val Lys Thr Gln Ser Gly Thr Lys Asn Leu Arg Ile Gln  
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 Cys Glu Gly Gly Ser Phe Ser Leu Gln Ser Asp Pro Arg Ser Thr Gln  
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 Ser Glu Val Pro Glu Gln Pro Pro Ala Gln Ala Leu Pro Gly Ser Thr  
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 Pro Lys Arg Ala Tyr Tyr Ile Tyr Ser Gly Gly Glu Lys Ile Pro Leu  
                           165                          170                          175  
 Val Leu Ser Arg Pro Leu Ser Ser Asn Val Ala Thr Leu Gln His Leu  
                           180                          185                          190  
 Cys Arg Lys Thr Val Asn Gly His Leu Asp Ser Tyr Glu Lys Val Thr  
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 Leu  
 225

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 35 40 45  
 Ala Pro Gly Asp Thr His Phe Arg Thr Phe Arg Ser His Ala Asp Tyr  
 50 55 60  
 Arg Arg Ile Thr Arg Ala Ser Ala Leu Leu Asp Ala Cys Gly Phe Tyr  
 65 70 75 80  
 Trp Gly Pro Leu Ser Val His Gly Ala His Glu Arg Leu Arg Ala Glu  
 85 90 95  
 Pro Val Gly Thr Phe Leu Val Arg Asp Ser Arg Gln Arg Asn Cys Phe  
 100 105 110

Phe Ala Leu Ser Val Lys Met Ala Ser Gly Pro Thr Ser Ile Arg Val  
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 His Phe Gln Ala Gly Arg Phe His Leu Asp Gly Ser Arg Glu Ser Phe  
       130                                  135                                  140  
 Asp Cys Leu Phe Glu Leu Leu Glu His Tyr Val Ala Ala Pro Arg Arg  
   145                                  150                                  155                                  160  
 Met Leu Gly Ala Pro Leu Arg Gln Arg Arg Val Arg Pro Leu Gln Glu  
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 Leu Cys Arg Gln Arg Ile Val Ala Thr Val Gly Arg Glu Asn Leu Ala  
                                   180                                  185                                  190  
 Arg Ile Pro Leu Asn Pro Val Leu Arg Asp Tyr Leu Ser Ser Phe Pro  
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 Phe Gln Ile  
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 <212> DNA  
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 <212> PRT  
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<400> 12

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Glu	Leu	Cys	Arg	Gln	Arg	Ile	Val	Ala	Ala	Val	Gly	Arg	Glu	Asn	Leu	
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Pro Phe Gln Ile  
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gtcacgcccc tcagcccccg ctgagtcctt tctctgttgt cgcgtccgaa tcgagttccc 240  
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Met Ala Ser Phe Pro Pro Arg Val Asn Glu  
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aaa gag atc gtg aga tca cgt act ata ggg gaa ctc ttg gct cca gca 340  
Lys Glu Ile Val Arg Ser Arg Thr Ile Gly Glu Leu Leu Ala Pro Ala  
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gct cct ttt gac aag aaa tgt ggt ggt gag aac tgg acg gtt gct ttt 388  
Ala Pro Phe Asp Lys Lys Cys Gly Gly Glu Asn Trp Thr Val Ala Phe  
30 35 40  
gct cct gat ggt tcc tac ttt gcg tgg tca caa gga tat cgc ata gtg 436  
Ala Pro Asp Gly Ser Tyr Phe Ala Trp Ser Gln Gly Tyr Arg Ile Val  
45 50 55  
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Lys Leu Val Pro Trp Ser Gln Cys Arg Lys Asn Phe Leu Leu His Gly  
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Ser Lys Asn Val Thr Asn Ser Ser Cys Leu Lys Leu Ala Arg Gln Asn  
75 80 85 90  
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Ser Asn Gly Gly Gln Lys Asn Lys Pro Pro Glu His Val Ile Asp Cys  
95 100 105  
gga gac ata gtc tgg agt ctt gct ttt ggg tct tca gtt cca gaa aaa 628  
Gly Asp Ile Val Trp Ser Leu Ala Phe Gly Ser Ser Val Pro Glu Lys  
110 115 120  
cag agt cgt tgc gtt aat ata gaa tgg cat ccg ttc cga ttt gga cag 676

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Asp	Gln	Leu	Leu	Leu	Ala	Thr	Gly	Leu	Asn	Asn	Gly	Arg	Ile	Lys	Ile		
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Trp	Asp	Val	Tyr	Thr	Gly	Lys	Leu	Leu	Leu	Asn	Leu	Val	Asp	His	Ile		
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Glu	Met	Val	Arg	Asp	Leu	Thr	Phe	Ala	Pro	Asp	Gly	Ser	Leu	Leu	Leu		
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Val	Ser	Ala	Ser	Arg	Asp	Lys	Thr	Leu	Arg	Val	Trp	Asp	Leu	Lys	Asp		
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Ser	Cys	Ala	Phe	Ser	Pro	Asp	Cys	Ser	Met	Leu	Cys	Ser	Val	Gly	Ala		
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agt	aaa	gca	gtt	ttc	ctt	tgg	aat	atg	gat	aaa	tac	acc	atg	att	agg	1012	
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Lys	Leu	Glu	Gly	His	His	His	Asp	Val	Val	Ala	Cys	Asp	Phe	Ser	Pro		
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Asp	Gly	Ala	Leu	Leu	Ala	Thr	Ala	Ser	Tyr	Asp	Thr	Arg	Val	Tyr	Val		
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Trp	Asp	Pro	His	Asn	Gly	Asp	Leu	Leu	Met	Glu	Phe	Gly	His	Leu	Phe		
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aga	gct	gtg	tct	ttc	agt	cat	gat	gga	ctg	cat	gtt	gcc	agc	ctt	gct	1252	
Arg	Ala	Val	Ser	Phe	Ser	His	Asp	Gly	Leu	His	Val	Ala	Ser	Leu	Ala		
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Asp	Asp	Lys	Met	Val	Arg	Phe	Trp	Arg	Ile	Asp	Glu	Asp	Cys	Pro	Val		
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Gln Val Ala Pro Leu Ser Asn Gly Leu Cys Cys Ala Phe Ser Thr Asp  
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 gcc act cca agg caa gtc cct agc ctt caa cat ata tgt cgc atg tca 1444  
 Ala Thr Pro Arg Gln Val Pro Ser Leu Gln His Ile Cys Arg Met Ser  
 380 385 390  
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 Ile Arg Arg Val Met Ser Thr Gln Glu Val Gln Lys Leu Pro Val Pro  
 395 400 405 410  
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 Ser Lys Ile Leu Ala Phe Leu Ser Tyr Arg Gly  
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 <211> 421  
 <212> PRT  
 <213> Mus musculus

<400> 14  
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 35 40 45  
 Phe Ala Trp Ser Gln Gly Tyr Arg Ile Val Lys Leu Val Pro Trp Ser  
 50 55 60  
 Gln Cys Arg Lys Asn Phe Leu Leu His Gly Ser Lys Asn Val Thr Asn  
 65 70 75 80  
 Ser Ser Cys Leu Lys Leu Ala Arg Gln Asn Ser Asn Gly Gly Gln Lys  
 85 90 95  
 Asn Lys Pro Pro Glu His Val Ile Asp Cys Gly Asp Ile Val Trp Ser  
 100 105 110  
 Leu Ala Phe Gly Ser Ser Val Pro Glu Lys Gln Ser Arg Cys Val Asn  
 115 120 125  
 Ile Glu Trp His Arg Phe Arg Phe Gly Gln Asp Gln Leu Leu Leu Ala  
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Thr	Gly	Leu	Asn	Asn	Gly	Arg	Ile	Lys	Ile	Trp	Asp	Val	Tyr	Thr	Gly	
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Thr	Phe	Ala	Pro	Asp	Gly	Ser	Leu	Leu	Leu	Val	Ser	Ala	Ser	Arg	Asp	
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Lys	Thr	Leu	Arg	Val	Trp	Asp	Leu	Lys	Asp	Asp	Gly	Asn	Met	Val	Lys	
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Val	Leu	Arg	Ala	His	Gln	Asn	Trp	Val	Tyr	Ser	Cys	Ala	Phe	Ser	Pro	
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Trp	Asn	Met	Asp	Lys	Tyr	Thr	Met	Ile	Arg	Lys	Leu	Glu	Gly	His	His	
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His	Asp	Val	Val	Ala	Cys	Asp	Phe	Ser	Pro	Asp	Gly	Ala	Leu	Leu	Ala	
			260					265					270			
Thr	Ala	Ser	Tyr	Asp	Thr	Arg	Val	Tyr	Val	Trp	Asp	Pro	His	Asn	Gly	
		275					280					285				
Asp	Leu	Leu	Met	Glu	Phe	Gly	His	Leu	Phe	Pro	Ser	Pro	Thr	Pro	Ile	
	290					295					300					
Phe	Ala	Gly	Gly	Ala	Asn	Asp	Arg	Trp	Val	Arg	Ala	Val	Ser	Phe	Ser	
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His	Asp	Gly	Leu	His	Val	Ala	Ser	Leu	Ala	Asp	Asp	Lys	Met	Val	Arg	
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Phe	Trp	Arg	Ile	Asp	Glu	Asp	Cys	Pro	Val	Gln	Val	Ala	Pro	Leu	Ser	
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	370					375					380					
Pro	Ser	Leu	Gln	His	Ile	Cys	Arg	Met	Ser	Ile	Arg	Arg	Val	Met	Ser	
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<212> DNA  
<213> Homo sapiens

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<211> 1122  
<212> DNA  
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<212> DNA  
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<220>  
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<222> (423)..(2030)

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ca atg gat aaa gtg ggg aaa atg tgg aac aac tta aaa tac aga tgc	467
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Gln Asn Leu Phe Ser His Glu Gly Gly Ser Arg Asn Glu Asn Val Glu	
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atg aac ccc aac aga tgt ccg tct gtc aaa gag aaa agc atc agt ctg	563
Met Asn Pro Asn Arg Cys Pro Ser Val Lys Glu Lys Ser Ile Ser Leu	
35 40 45	
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Gly Glu Ala Ala Pro Gln Gln Glu Ser Ser Pro Leu Arg Glu Asn Val	
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gcc tta cag ctg gga ctg agc cct tcc aag acc ttt tcc agg cgg aac	659
Ala Leu Gln Leu Gly Leu Ser Pro Ser Lys Thr Phe Ser Arg Arg Asn	
65 70 75	
caa aac tgt gcc gca gag atc cct caa gtg gtt gaa atc agc atc gag	707
Gln Asn Cys Ala Ala Glu Ile Pro Gln Val Val Glu Ile Ser Ile Glu	
80 85 90 95	
aaa gac agt gac tcg ggt gcc acc cca gga acg agg ctt gca cgg aga	755
Lys Asp Ser Asp Ser Gly Ala Thr Pro Gly Thr Arg Leu Ala Arg Arg	
100 105 110	
gac tcc tac tcg cgg cac gcc ccg tgg gga gga aag aag aaa cat tcc	803
Asp Ser Tyr Ser Arg His Ala Pro Trp Gly Gly Lys Lys Lys His Ser	
115 120 125	
tgt tcc aca aag acc cag agt tca ttg gat acc gag aaa aag ttt ggt	851
Cys Ser Thr Lys Thr Gln Ser Ser Leu Asp Thr Glu Lys Lys Phe Gly	
130 135 140	
aga act cga agc ggc ctt cag agg cga gag cgg cgc tat gga gtc agc	899
Arg Thr Arg Ser Gly Leu Gln Arg Arg Glu Arg Arg Tyr Gly Val Ser	
145 150 155	
tcc atg cag gac atg gac agc gtt tct agc cgc gcg gtc ggg agc cgc	947
Ser Met Gln Asp Met Asp Ser Val Ser Ser Arg Ala Val Gly Ser Arg	
160 165 170 175	
tcc ctg agg cag agg ctc cag gac acg gtg ggt ttg tgt ttt ccc atg	995
Ser Leu Arg Gln Arg Leu Gln Asp Thr Val Gly Leu Cys Phe Pro Met	
180 185 190	
aga act tac agc aag cag tca aag cca ctc ttt tcc aat aaa aga aaa	1043
Arg Thr Tyr Ser Lys Gln Ser Lys Pro Leu Phe Ser Asn Lys Arg Lys	
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Ile His Leu Ser Glu Leu Met Leu Glu Lys Cys Pro Phe Pro Ala Gly	
210 215 220	

tcg gat tta gca caa aag tgg cat ttg att aaa cag cat acc gcc cct	1139
Ser Asp Leu Ala Gln Lys Trp His Leu Ile Lys Gln His Thr Ala Pro	
225 230 235	
gtg agc cca cac tca aca ttt ttt gat aca ttt gat cca tca ctg gtg	1187
Val Ser Pro His Ser Thr Phe Phe Asp Thr Phe Asp Pro Ser Leu Val	
240 245 250 255	
tct aca gaa gat gaa gaa gat agg ctt cgc gag aga aga cgg ctt agt	1235
Ser Thr Glu Asp Glu Glu Asp Arg Leu Arg Glu Arg Arg Arg Leu Ser	
260 265 270	
atc gaa gaa ggg gtg gat ccc cct ccc aac gca caa ata cac acc ttt	1283
Ile Glu Glu Gly Val Asp Pro Pro Asn Ala Gln Ile His Thr Phe	
275 280 285	
gaa gct act gca cag gtc aac cca ttg tat aag ctg gga cca aag tta	1331
Glu Ala Thr Ala Gln Val Asn Pro Leu Tyr Lys Leu Gly Pro Lys Leu	
290 295 300	
gct cct ggg atg aca gag ata agt gga gat ggt tct gca att cca caa	1379
Ala Pro Gly Met Thr Glu Ile Ser Gly Asp Gly Ser Ala Ile Pro Gln	
305 310 315	
gcs aat tgt gac tca gaa gag gat tca acc acc cta tgt ctg cag tca	1427
Xaa Asn Cys Asp Ser Glu Glu Asp Ser Thr Thr Leu Cys Leu Gln Ser	
320 325 330 335	
cgg agg cag aag cag cgc cag gtg tcc ggg gac agc cac gcg cac gtt	1475
Arg Arg Gln Lys Gln Arg Gln Val Ser Gly Asp Ser His Ala His Val	
340 345 350	
agc aga cag gga gct tgg aaa gtt cat acg cag atc gat tac ata cac	1523
Ser Arg Gln Gly Ala Trp Lys Val His Thr Gln Ile Asp Tyr Ile His	
355 360 365	
tgc ctc gtg cca gat ttg ctt cag atc aca ggg aat ccc tgt tac tgg	1571
Cys Leu Val Pro Asp Leu Leu Gln Ile Thr Gly Asn Pro Cys Tyr Trp	
370 375 380	
ggc gtg atg gac cga tac gag gcc gaa gcc ctt cta gaa ggg aaa ccg	1619
Gly Val Met Asp Arg Tyr Glu Ala Glu Ala Leu Leu Glu Gly Lys Pro	
385 390 395	
gaa ggc acg ttc ttg ctc agg gac tct gca cag gag gac tac ctc ttc	1667
Glu Gly Thr Phe Leu Leu Arg Asp Ser Ala Gln Glu Asp Tyr Leu Phe	
400 405 410 415	
tct gtg agc ttc cgc cgc tac aac agg tct ctg cac gcc cgg atc gag	1715
Ser Val Ser Phe Arg Arg Tyr Asn Arg Ser Leu His Ala Arg Ile Glu	
420 425 430	
cag tgg aac cac aac ttc agc ttc gat gcc cat gac ccc tgc gtg ttt	1763
Gln Trp Asn His Asn Phe Ser Phe Asp Ala His Asp Pro Cys Val Phe	
435 440 445	

cac tcc tcc acw gtc acg ggg ctt ctc gaa cac tat aaa gac ccc agc 1811  
 His Ser Ser Xaa Val Thr Gly Leu Leu Glu His Tyr Lys Asp Pro Ser  
           450                                  455                                  460

tct tgc atg ttt ttt gaa ccg ttg cta acg ata tca ctg aat aga act 1859  
 Ser Cys Met Phe Phe Glu Pro Leu Leu Thr Ile Ser Leu Asn Arg Thr  
           465                                  470                                  475

ttc cct ttc agc ctg cag tat atc tgc cgc gca gtg atc tgc aga tgc 1907  
 Phe Pro Phe Ser Leu Gln Tyr Ile Cys Arg Ala Val Ile Cys Arg Cys  
           480                                  485                                  490                                  495

act acg tat gat ggg att gac ggg ctc ccg cta ccg tgc atg tta cag 1955  
 Thr Thr Tyr Asp Gly Ile Asp Gly Leu Pro Leu Pro Ser Met Leu Gln  
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gat ttt tta aaa gag tat cat tat aaa caa aaa gtt agg gtt cgc tgg 2003  
 Asp Phe Leu Lys Glu Tyr His Tyr Lys Gln Lys Val Arg Val Arg Trp  
                                   515                                  520                                  525

tta gaa cga gar cca gtc aaa gca aag taactcctgt ccccaaaggg 2050  
 Leu Glu Arg Xaa Pro Val Lys Ala Lys  
           530                                  535

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 <213> Mus musculus

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 <223> Xaa is unsure

<220>  
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<220>

<221> UNSURE

<222> (531)

<223> Xaa is unsure

<400> 18

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Asn	Pro	Asn	Arg	Cys	Pro	Ser	Val	Lys	Glu	Lys	Ser	Ile	Ser	Leu	Gly	
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Glu	Ala	Ala	Pro	Gln	Gln	Glu	Ser	Ser	Pro	Leu	Arg	Glu	Asn	Val	Ala	
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Leu	Gln	Leu	Gly	Leu	Ser	Pro	Ser	Lys	Thr	Phe	Ser	Arg	Arg	Asn	Gln	
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Asn	Cys	Ala	Ala	Glu	Ile	Pro	Gln	Val	Val	Glu	Ile	Ser	Ile	Glu	Lys	
				85					90					95		
Asp	Ser	Asp	Ser	Gly	Ala	Thr	Pro	Gly	Thr	Arg	Leu	Ala	Arg	Arg	Asp	
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Ser	Tyr	Ser	Arg	His	Ala	Pro	Trp	Gly	Gly	Lys	Lys	Lys	His	Ser	Cys	
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Ser	Thr	Lys	Thr	Gln	Ser	Ser	Leu	Asp	Thr	Glu	Lys	Lys	Phe	Gly	Arg	
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Thr	Arg	Ser	Gly	Leu	Gln	Arg	Arg	Glu	Arg	Arg	Tyr	Gly	Val	Ser	Ser	
145				150					155						160	
Met	Gln	Asp	Met	Asp	Ser	Val	Ser	Ser	Arg	Ala	Val	Gly	Ser	Arg	Ser	
			165						170					175		
Leu	Arg	Gln	Arg	Leu	Gln	Asp	Thr	Val	Gly	Leu	Cys	Phe	Pro	Met	Arg	
		180						185					190			
Thr	Tyr	Ser	Lys	Gln	Ser	Lys	Pro	Leu	Phe	Ser	Asn	Lys	Arg	Lys	Ile	
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His	Leu	Ser	Glu	Leu	Met	Leu	Glu	Lys	Cys	Pro	Phe	Pro	Ala	Gly	Ser	
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Asp	Leu	Ala	Gln	Lys	Trp	His	Leu	Ile	Lys	Gln	His	Thr	Ala	Pro	Val	
225					230					235					240	
Ser	Pro	His	Ser	Thr	Phe	Phe	Asp	Thr	Phe	Asp	Pro	Ser	Leu	Val	Ser	
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Thr Glu Asp Glu Glu Asp Arg Leu Arg Glu Arg Arg Arg Leu Ser Ile  
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 Glu Glu Gly Val Asp Pro Pro Pro Asn Ala Gln Ile His Thr Phe Glu  
 275 280 285  
 Ala Thr Ala Gln Val Asn Pro Leu Tyr Lys Leu Gly Pro Lys Leu Ala  
 290 295 300  
 Pro Gly Met Thr Glu Ile Ser Gly Asp Gly Ser Ala Ile Pro Gln Xaa  
 305 310 315 320  
 Asn Cys Asp Ser Glu Glu Asp Ser Thr Thr Leu Cys Leu Gln Ser Arg  
 325 330 335  
 Arg Gln Lys Gln Arg Gln Val Ser Gly Asp Ser His Ala His Val Ser  
 340 345 350  
 Arg Gln Gly Ala Trp Lys Val His Thr Gln Ile Asp Tyr Ile His Cys  
 355 360 365  
 Leu Val Pro Asp Leu Leu Gln Ile Thr Gly Asn Pro Cys Tyr Trp Gly  
 370 375 380  
 Val Met Asp Arg Tyr Glu Ala Glu Ala Leu Leu Glu Gly Lys Pro Glu  
 385 390 395 400  
 Gly Thr Phe Leu Leu Arg Asp Ser Ala Gln Glu Asp Tyr Leu Phe Ser  
 405 410 415  
 Val Ser Phe Arg Arg Tyr Asn Arg Ser Leu His Ala Arg Ile Glu Gln  
 420 425 430  
 Trp Asn His Asn Phe Ser Phe Asp Ala His Asp Pro Cys Val Phe His  
 435 440 445  
 Ser Ser Xaa Val Thr Gly Leu Leu Glu His Tyr Lys Asp Pro Ser Ser  
 450 455 460  
 Cys Met Phe Phe Glu Pro Leu Leu Thr Ile Ser Leu Asn Arg Thr Phe  
 465 470 475 480  
 Pro Phe Ser Leu Gln Tyr Ile Cys Arg Ala Val Ile Cys Arg Cys Thr  
 485 490 495  
 Thr Tyr Asp Gly Ile Asp Gly Leu Pro Leu Pro Ser Met Leu Gln Asp  
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 Phe Leu Lys Glu Tyr His Tyr Lys Gln Lys Val Arg Val Arg Trp Leu  
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 Glu Arg Xaa Pro Val Lys Ala Lys  
 530 535

<210> 19



<211> 1221  
<212> DNA  
<213> Homo sapiens

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gaagaagggg ttgatcccc tccaatgca caaatacata catttgaagc tactgcacag 180  
gttaatccat tattaactg ggaccaaagt tagctcctgg aatgactgaa ataagtgggg 240  
acagttctgc aattccacaa gctaattgtg actcggaaga ggatacaacc accctgtgtt 300  
gcagtcacgg aggcagaagc agcgtcagat atctggagac agccataccc atgttagcag 360  
acagggagct tggaaagtcc acacacagat tgattacata cactgcttcg tgcttgattt 420  
gcttcaaatt acaggggaatc cctgttactg gggagtgatg gaccgttatg aagcagaagc 480  
ccttctcgaa gggaaacctg aaggcacgtt tttgctcagg gactctgcgc aagaggacta 540  
cttcttctct gtgagcttcc gccgatacaa cagatccctg catgcccga ttgagcagtg 600  
gaatcacaaac tttagtttctg acgcccataga cccgtgtgta tttcactcct ccactgtaac 660  
gggacttttta gaacattata aagatcccag ttcgtgcatg ttttttgaac cattgcttac 720  
tatatcacta aataggactt tcccttttag cctgcagtat atctgtcgcg cggtaatctg 780  
caggtgcact acgtatgatg gaattgatgg gctccctcta ccctcaatgt tacaggattt 840  
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caaggcaaag taaactctcc ggtccccaaa ggggtgtaac taggtccgct ttcattgtgca 960  
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gcctattgga acaatagcgg atagagctac aggtgttcag taagactaca aaaacatttt 1140  
gcctatttctg ctaacagttt ggtttttaat ggctgtggta tttgagtggg gcaactctgg 1200  
ggcatttggt atgaagaaat g 1221

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<212> DNA  
<213> Mus musculus

<220>  
<221> CDS  
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Met  
1  
gag gcc gga gag gag ccg ctg ctg ctg gct gaa ctc aag cct ggg cgc 166  
Glu Ala Gly Glu Glu Pro Leu Leu Leu Ala Glu Leu Lys Pro Gly Arg  
5 10 15  
ccc cac cag ttc gac tgg aag tca agc tgc gag acc tgg agc gtg gcc 214  
Pro His Gln Phe Asp Trp Lys Ser Ser Cys Glu Thr Trp Ser Val Ala  
20 25 30  
ttc tgc cca gac ggt tcc tgg ttc gcc tgg tct caa gga cac tgc gtg 262  
Phe Ser Pro Asp Gly Ser Trp Phe Ala Trp Ser Gln Gly His Cys Val  
35 40 45  
gtc aag ctg gtc ccc tgg ccc tta gag gaa cag ttc atc cct aaa gga 310  
Val Lys Leu Val Pro Trp Pro Leu Glu Glu Gln Phe Ile Pro Lys Gly  
50 55 60 65  
ttc gaa gcc aag agc cga agc agc aag aat gac cca aaa gga cgg ggc 358  
Phe Glu Ala Lys Ser Arg Ser Ser Lys Asn Asp Pro Lys Gly Arg Gly  
70 75 80  
agt ctg aag gag aag acg ctg gac tgt ggc cag att gtg tgg ggg ctg 406  
Ser Leu Lys Glu Lys Thr Leu Asp Cys Gly Gln Ile Val Trp Gly Leu  
85 90 95  
gcc ttc agc ccg tgg ccc tct cca ccc agc agg aaa ctc tgg gca cgt 454  
Ala Phe Ser Pro Trp Pro Ser Pro Pro Ser Arg Lys Leu Trp Ala Arg  
100 105 110  
cac cat ccc cag gcg cct gat gtt tct tgc ctg atc ctg gcc aca ggt 502  
His His Pro Gln Ala Pro Asp Val Ser Cys Leu Ile Leu Ala Thr Gly  
115 120 125  
ctc aac gat ggg cag atc aag att tgg gag gta cag aca ggc ctc ctg 550  
Leu Asn Asp Gly Gln Ile Lys Ile Trp Glu Val Gln Thr Gly Leu Leu  
130 135 140 145  
ctt ctg aat ctt tct ggc cac caa gac gtc gtg aga gat ctg agc ttc 598  
Leu Leu Asn Leu Ser Gly His Gln Asp Val Val Arg Asp Leu Ser Phe  
150 155 160  
acg ccc agc ggc agt ttg att ttg gtc tct gca tcc cgg gat aag aca 646  
Thr Pro Ser Gly Ser Leu Ile Leu Val Ser Ala Ser Arg Asp Lys Thr  
165 170 175  
ctt cga att tgg gac ctg aat aaa cac ggt aag cag atc cag gtg tta 694  
Leu Arg Ile Trp Asp Leu Asn Lys His Gly Lys Gln Ile Gln Val Leu  
180 185 190  
tcc ggc cat ctg cag tgg gtt tac tgc tgc tcc atc tcc cct gac tgt 742

Ser	Gly	His	Leu	Gln	Trp	Val	Tyr	Cys	Cys	Ser	Ile	Ser	Pro	Asp	Cys		
195						200					205						
agc	atg	ctg	tgc	tct	gca	gct	ggg	gag	aag	tcg	gtc	ttt	ctg	tgg	agc	790	
Ser	Met	Leu	Cys	Ser	Ala	Ala	Gly	Glu	Lys	Ser	Val	Phe	Leu	Trp	Ser		
210					215					220					225		
atg	cgg	tcc	tac	aca	cta	atc	cgg	aaa	cta	gaa	ggc	cac	caa	agc	agt	838	
Met	Arg	Ser	Tyr	Thr	Leu	Ile	Arg	Lys	Leu	Glu	Gly	His	Gln	Ser	Ser		
				230					235					240			
gtt	gtc	tcc	tgt	gat	ttc	tct	cct	gat	tca	gcc	ttg	ctt	gtc	aca	gct	886	
Val	Val	Ser	Cys	Asp	Phe	Ser	Pro	Asp	Ser	Ala	Leu	Leu	Val	Thr	Ala		
			245					250					255				
tcg	tat	gac	acc	agt	gtg	att	atg	tgg	gac	ccc	tac	acc	ggc	gcg	agg	934	
Ser	Tyr	Asp	Thr	Ser	Val	Ile	Met	Trp	Asp	Pro	Tyr	Thr	Gly	Ala	Arg		
		260					265					270					
ctg	agg	tca	ctt	cat	cac	aca	caa	ctt	gaa	ccc	acc	atg	gat	gac	agt	982	
Leu	Arg	Ser	Leu	His	His	Thr	Gln	Leu	Glu	Pro	Thr	Met	Asp	Asp	Ser		
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gac	gtc	cac	atg	agc	tcc	ctg	agg	tcc	gtg	tgc	ttc	tca	cct	gaa	ggc	1030	
Asp	Val	His	Met	Ser	Ser	Leu	Arg	Ser	Val	Cys	Phe	Ser	Pro	Glu	Gly		
290					295					300					305		
ttg	tat	ctc	gct	acg	gtg	gca	gat	gac	agg	ctg	ctc	agg	atc	tgg	gct	1078	
Leu	Tyr	Leu	Ala	Thr	Val	Ala	Asp	Asp	Arg	Leu	Leu	Arg	Ile	Trp	Ala		
				310					315					320			
ctg	gaa	ctg	aag	gct	ccg	gtt	gcc	ttt	gct	ccg	atg	acc	aat	ggc	ctt	1126	
Leu	Glu	Leu	Lys	Ala	Pro	Val	Ala	Phe	Ala	Pro	Met	Thr	Asn	Gly	Leu		
			325					330					335				
tgc	tgc	acg	ttc	ttc	cca	cac	ggc	gga	att	att	gcc	aca	ggg	acg	aga	1174	
Cys	Cys	Thr	Phe	Phe	Pro	His	Gly	Gly	Ile	Ile	Ala	Thr	Gly	Thr	Arg		
		340					345					350					
gat	ggc	cat	gtc	cag	ttc	tgg	aca	gct	ccc	cgg	gtc	ctg	tcc	tca	ctg	1222	
Asp	Gly	His	Val	Gln	Phe	Trp	Thr	Ala	Pro	Arg	Val	Leu	Ser	Ser	Leu		
	355					360					365						
aag	cac	tta	tgc	agg	aaa	gcc	ctc	cga	agt	ttc	ctg	aca	acg	tat	caa	1270	
Lys	His	Leu	Cys	Arg	Lys	Ala	Leu	Arg	Ser	Phe	Leu	Thr	Thr	Tyr	Gln		
370					375					380					385		
gtc	cta	gca	ctg	cca	atc	ccc	aag	aag	atg	aaa	gag	ttc	ctc	aca	tac	1318	
Val	Leu	Ala	Leu	Pro	Ile	Pro	Lys	Lys	Met	Lys	Glu	Phe	Leu	Thr	Tyr		
				390					395					400			
agg	act	ttc	tagcagt	gcc	ggctccccca	cctcctgcag	cagcagcagt									1367	
Arg	Thr	Phe															
acaagggact	ggctaggatg	gagtcaggca	gtcacactg	gaccagtgtg	gaccttcctt	1427											

cctcccatgg catgtgcaag taggtctgcg tgacccact tctgtggtgc cggccttacc 1487  
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<212> PRT  
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Ala Phe Ser Pro Asp Gly Ser Trp Phe Ala Trp Ser Gln Gly His Cys  
35 40 45  
Val Val Lys Leu Val Pro Trp Pro Leu Glu Glu Gln Phe Ile Pro Lys  
50 55 60  
Gly Phe Glu Ala Lys Ser Arg Ser Ser Lys Asn Asp Pro Lys Gly Arg  
65 70 75 80  
Gly Ser Leu Lys Glu Lys Thr Leu Asp Cys Gly Gln Ile Val Trp Gly  
85 90 95

Leu Ala Phe Ser Pro Trp Pro Ser Pro Pro Ser Arg Lys Leu Trp Ala  
 100 105 110  
 Arg His His Pro Gln Ala Pro Asp Val Ser Cys Leu Ile Leu Ala Thr  
 115 120 125  
 Gly Leu Asn Asp Gly Gln Ile Lys Ile Trp Glu Val Gln Thr Gly Leu  
 130 135 140  
 Leu Leu Leu Asn Leu Ser Gly His Gln Asp Val Val Arg Asp Leu Ser  
 145 150 155 160  
 Phe Thr Pro Ser Gly Ser Leu Ile Leu Val Ser Ala Ser Arg Asp Lys  
 165 170 175  
 Thr Leu Arg Ile Trp Asp Leu Asn Lys His Gly Lys Gln Ile Gln Val  
 180 185 190  
 Leu Ser Gly His Leu Gln Trp Val Tyr Cys Cys Ser Ile Ser Pro Asp  
 195 200 205  
 Cys Ser Met Leu Cys Ser Ala Ala Gly Glu Lys Ser Val Phe Leu Trp  
 210 215 220  
 Ser Met Arg Ser Tyr Thr Leu Ile Arg Lys Leu Glu Gly His Gln Ser  
 225 230 235 240  
 Ser Val Val Ser Cys Asp Phe Ser Pro Asp Ser Ala Leu Leu Val Thr  
 245 250 255  
 Ala Ser Tyr Asp Thr Ser Val Ile Met Trp Asp Pro Tyr Thr Gly Ala  
 260 265 270  
 Arg Leu Arg Ser Leu His His Thr Gln Leu Glu Pro Thr Met Asp Asp  
 275 280 285  
 Ser Asp Val His Met Ser Ser Leu Arg Ser Val Cys Phe Ser Pro Glu  
 290 295 300  
 Gly Leu Tyr Leu Ala Thr Val Ala Asp Asp Arg Leu Leu Arg Ile Trp  
 305 310 315 320  
 Ala Leu Glu Leu Lys Ala Pro Val Ala Phe Ala Pro Met Thr Asn Gly  
 325 330 335  
 Leu Cys Cys Thr Phe Phe Pro His Gly Gly Ile Ile Ala Thr Gly Thr  
 340 345 350  
 Arg Asp Gly His Val Gln Phe Trp Thr Ala Pro Arg Val Leu Ser Ser  
 355 360 365  
 Leu Lys His Leu Cys Arg Lys Ala Leu Arg Ser Phe Leu Thr Thr Tyr  
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 Gln Val Leu Ala Leu Pro Ile Pro Lys Lys Met Lys Glu Phe Leu Thr  
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Tyr Arg Thr Phe

<210> 22  
<211> 1246  
<212> DNA  
<213> Homo sapiens

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cagcaggaag ctctggggcac gccaccacc ccaagtgcc gatgtctctt gcctgggttct 240  
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ggaataatgg gccaaacatc tggctcttgca ttgaaatagc atttctttgg gattgtgaat 1200  
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<210> 23  
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<212> DNA  
<213> Homo sapiens

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 ctgagttatc agtggccatt tattagcatc atatttattt gtattttctc aacagatgtt 360  
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 aa 422

<210> 24  
 <211> 2019  
 <212> DNA  
 <213> Mus musculus

<220>  
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 <222> (1981)  
 <223> N is unsure

<220>  
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 <222> (1992)  
 <223> N is unsure

<220>  
 <221> UNSURE  
 <222> (2000)  
 <223> N is unsure

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 ggagcagttc tgtgaccatc cactggagca ctgtgacgat acaagactcc atgatgcagc 180  
 ctatgtaggg gacctccaga ccctcaggaa cctactgcaa gaggagagct accggagccg 240  
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 gagcactgag atccttttgg aagctggtgc tgatcccaac ggcagccggc accaccgcag 480  
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<210> 25  
 <211> 350  
 <212> PRT  
 <213> Mus musculus



<220>

<221> UNSURE

<222> (167)

<223> Xaa is unsure

<400> 25

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35 40 45  
Glu His Cys Asp Asp Thr Arg Leu His Asp Ala Ala Tyr Val Gly Asp  
50 55 60  
Leu Gln Thr Leu Arg Asn Leu Leu Gln Glu Glu Ser Tyr Arg Ser Arg  
65 70 75 80  
Ile Asn Glu Lys Ser Val Trp Cys Cys Gly Trp Leu Pro Cys Thr Pro  
85 90 95  
Leu Arg Ile Ala Ala Thr Ala Gly His Gly Asn Cys Val Asp Phe Leu  
100 105 110  
Ile Arg Lys Gly Ala Glu Val Asp Leu Val Asp Val Lys Gly Gln Thr  
115 120 125  
Ala Leu Tyr Val Ala Val Val Asn Gly His Leu Glu Ser Thr Glu Ile  
130 135 140  
Leu Leu Glu Ala Gly Ala Asp Pro Asn Gly Ser Arg His His Arg Ser  
145 150 155 160  
Thr Pro Val Tyr His Ala Xaa Arg Val Gly Arg Asp Asp Ile Leu Lys  
165 170 175  
Ala Leu Ile Arg Tyr Gly Ala Asp Val Asp Val Asn His His Leu Asn  
180 185 190  
Ser Asp Thr Arg Pro Pro Phe Ser Arg Arg Leu Thr Ser Leu Val Val  
195 200 205  
Cys Pro Leu Tyr Ile Ser Ala Ala Tyr His Asn Leu Gln Cys Phe Arg  
210 215 220  
Leu Leu Leu Gln Ala Gly Ala Asn Pro Asp Phe Asn Cys Asn Gly Pro  
225 230 235 240  
Val Asn Thr Gln Glu Phe Tyr Arg Gly Ser Pro Gly Cys Val Met Asp  
245 250 255  
Ala Val Leu Arg His Gly Cys Glu Ala Ala Phe Val Ser Leu Leu Val  
260 265 270

Glu Phe Gly Ala Asn Leu Asn Leu Val Lys Trp Glu Ser Leu Gly Pro  
 275 280 285

Glu Ala Arg Gly Arg Arg Lys Met Asp Pro Glu Ala Leu Gln Val Phe  
 290 295 300

Lys Glu Ala Arg Ser Ile Pro Arg Thr Leu Leu Ser Leu Cys Arg Val  
 305 310 315 320

Ala Val Arg Arg Ala Leu Gly Lys Tyr Arg Leu His Leu Val Pro Ser  
 325 330 335

Leu Pro Leu Pro Asp Pro Ile Lys Lys Phe Leu Leu Tyr Glu  
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<210> 26

<211> 419

<212> DNA

<213> Homo sapiens

<400> 26

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 aggagagcta ccggagccgc atcaacgaga agtctgtctg gtgctgtggc tggctcccct 240  
 gcacaccgtt gogaatcgcg gccactgcag gccatgggag ctgtgtggac ttcctcatcc 300  
 ggaagggggc cgagggtgat ctggtggacg taaaaggaca gacggccctg tatgtggctg 360  
 tgggtgaacgg gcacctagag agtaccacga tccttctcga agctggcgcg gaccccaac 419

<210> 27

<211> 595

<212> DNA

<213> Homo sapiens

<400> 27

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 tcatttgatt ccttcgctgc ctctgccaga ccccataaag aagtttctac tccatgagta 180  
 gactccaagt gctgcggttg attccagtga gggagaaagt gatctgcagg gaggtggaca 240  
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 ctctagact gtcattgctc ctcagggtgcc tgggccgctg aacagtcctt gggtcattgt 360  
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 tcagttgcat attaatgtaa cgggccatgg ggtatgtaca tgtaggggct gaggttggag 480

gcctactaat ttccctgtagg gaagactccc agcacttctg gaactgtgct tctctttatt 540

tttctacttc tcaatttgat ggttcgatta aagccttcta gtatctcaat gaaaa 595

<210> 28

<211> 896

<212> DNA

<213> Mus musculus

<220>

<221> CDS

<222> (4)..(396)

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<223> n is unsure

<400> 28

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1				5					10					15		

aca	tcc	gct	gtc	aat	ccc	caa	agg	atg	ctg	agg	cca	cca	cca	acc	gct	96
Thr	Ser	Ala	Val	Asn	Pro	Gln	Arg	Met	Leu	Arg	Pro	Pro	Pro	Thr	Ala	
				20					25					30		

gtt	ttc	aac	tgt	gcc	gct	tgc	tgc	tgt	ctg	tgg	ggg	cag	atg	ctg	atg	144
Val	Phe	Asn	Cys	Ala	Ala	Cys	Cys	Cys	Leu	Trp	Gly	Gln	Met	Leu	Met	
			35					40					45			

aat	aca	tac	cgt	gta	gtt	cag	ctt	cct	gag	gag	gcc	aag	ggc	ttg	gtg	192
Asn	Thr	Tyr	Arg	Val	Val	Gln	Leu	Pro	Glu	Glu	Ala	Lys	Gly	Leu	Val	
		50					55					60				

cca	cca	gag	att	cta	cag	aag	tac	cat	gga	ttc	tac	tct	tcc	ctc	ttt	240
Pro	Pro	Glu	Ile	Leu	Gln	Lys	Tyr	His	Gly	Phe	Tyr	Ser	Ser	Leu	Phe	
	65					70					75					

gcc	ttg	gtg	agg	cag	ccc	agg	tcg	ctg	cag	cat	ctc	tgc	cgt	tgt	gcg	288
Ala	Leu	Val	Arg	Gln	Pro	Arg	Ser	Leu	Gln	His	Leu	Cys	Arg	Cys	Ala	
80				85						90					95	

ctc	cgc	agt	cac	ctg	gag	ggc	tgt	ctg	ccc	cat	gca	cta	ccg	cgc	ctt	336
Leu	Arg	Ser	His	Leu	Glu	Gly	Cys	Leu	Pro	His	Ala	Leu	Pro	Arg	Leu	
				100					105					110		

ccc	ctg	cca	ccg	cgc	atg	ctc	cgc	ttt	ctg	cag	ctg	gac	ttt	gag	gat	384
Pro	Leu	Pro	Pro	Arg	Met	Leu	Arg	Phe	Leu	Gln	Leu	Asp	Phe	Glu	Asp	
			115					120					125			

ctg ctc tac taggcttgct gccctgtgaa caaagcagac cccacccccca 433  
 Leu Leu Tyr  
 130

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 gacgccttga tccacacttg agagaagagg ccagatcagc accyggctgg tagtgatngc 553  
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 aatggtgcar gtgttagtcc ttgggangag agacagangg tgagaaagca agacagaggt 673  
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 <211> 130  
 <212> PRT  
 <213> Mus musculus

<400> 29  
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 35 40 45  
 Thr Tyr Arg Val Val Gln Leu Pro Glu Glu Ala Lys Gly Leu Val Pro  
 50 55 60  
 Pro Glu Ile Leu Gln Lys Tyr His Gly Phe Tyr Ser Ser Leu Phe Ala  
 65 70 75 80  
 Leu Val Arg Gln Pro Arg Ser Leu Gln His Leu Cys Arg Cys Ala Leu  
 85 90 95  
 Arg Ser His Leu Glu Gly Cys Leu Pro His Ala Leu Pro Arg Leu Pro  
 100 105 110  
 Leu Pro Pro Arg Met Leu Arg Phe Leu Gln Leu Asp Phe Glu Asp Leu  
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 Leu Tyr  
 130

<210> 30

<211> 436  
<212> DNA  
<213> Mus musculus

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gtgttcctcc aggtggaggg tcaggteccc ggggtgagctg gggctgcagc gggactcagg 360  
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cacaccgttg actggt 436

<210> 31  
<211> 2180  
<212> DNA  
<213> Homo sapiens

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<210> 32

<211> 2649

<212> DNA

<213> Mus musculus

<400> 32

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actggctcca gcatgactcg cttctcttat gcagagtact ttgctctggt tcactctggc 180  
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<210> 33  
 <211> 495  
 <212> DNA  
 <213> Homo sapiens

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<210> 34  
 <211> 709  
 <212> DNA  
 <213> Homo sapiens

<400> 34  
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 gccattggga aataccgtat aaaactccta gacaccttgc cgctcccagg caggctgatt 180  
 agatacctga aatacgagaa caccacagtaa ctggggccac ggggagagag gagtagcccc 240  
 tcagactctt cttactaagt ctcaggacgt cgggtgttccc aactccaagg ggacctggtg 300  
 acagacgagg ctgcaggctg cctccctctc agcctggaca gctaccagga tctcactggg 360  
 tctcagggcc cagagctttg gccagagcag agaacagaat gtgtcaagga gaagaatcat 420  
 ttgtttacaa actgatgagc agatcccaga ctttctctac cttcaggaat ggcagaaacc 480  
 tctattcctg gggccagggc agagcttgag gtgttctggg gaagggtggtg ctcagagcct 540  
 tccctgtgcc cctccacttg ttctggaaaa ctcaccactt gacttcagag ctttctctcc 600  
 aaagactaag atgaagacgt ggcccaaggt agggggtagg gggagcctgg gtcttggagg 660  
 gctttgttaa gtattaatat aataaatgtt acacatgtga aaaaaaaaaa 709

<210> 35  
 <211> 848  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (1)..(624)

<400> 35  
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 Leu Glu Lys Cys Gly Trp Tyr Trp Gly Pro Met Asn Trp Glu Asp Ala  
 1 5 10 15  
 gag atg aag ctg aaa ggg aaa cca gat ggt tct ttc ctg gta cga gac 96  
 Glu Met Lys Leu Lys Gly Lys Pro Asp Gly Ser Phe Leu Val Arg Asp  
 20 25 30  
 agt tct gat cct cgt tac atc ctg agc ctc agt ttc cga tca cag ggt 144  
 Ser Ser Asp Pro Arg Tyr Ile Leu Ser Leu Ser Phe Arg Ser Gln Gly  
 35 40 45  
 atc acc cac cac act aga atg gag cac tac aga gga acc ttc agc ctg 192  
 Ile Thr His His Thr Arg Met Glu His Tyr Arg Gly Thr Phe Ser Leu  
 50 55 60

tgg tgt cat ccc aag ttt gag gac cgc tgt caa tct gtt gta gag ttt	240
Trp Cys His Pro Lys Phe Glu Asp Arg Cys Gln Ser Val Val Glu Phe	
65 70 75 80	
att aag aga gcc att atg cac tcc aag aat gga aag ttt ctc tat ttc	288
Ile Lys Arg Ala Ile Met His Ser Lys Asn Gly Lys Phe Leu Tyr Phe	
85 90 95	
tta aga tcc agg gtt cca gga ctg cca cca act cct gtc cag ctg ctc	336
Leu Arg Ser Arg Val Pro Gly Leu Pro Pro Thr Pro Val Gln Leu Leu	
100 105 110	
tat cca gtg tcc cga ttc agc aat gtc aaa tcc ctc cag cac ctt tgc	384
Tyr Pro Val Ser Arg Phe Ser Asn Val Lys Ser Leu Gln His Leu Cys	
115 120 125	
aga ttc cgg ata cga cag ctc gtc agg ata gat cac atc cca gat ctc	432
Arg Phe Arg Ile Arg Gln Leu Val Arg Ile Asp His Ile Pro Asp Leu	
130 135 140	
cca ctg cct aaa cct ctg atc tct tat atc cga aag ttc tac tac tat	480
Pro Leu Pro Lys Pro Leu Ile Ser Tyr Ile Arg Lys Phe Tyr Tyr Tyr	
145 150 155 160	
gat cct cag gaa gag gta tac ctg tct cta aag gaa gcg cag cgt cag	528
Asp Pro Gln Glu Glu Val Tyr Leu Ser Leu Lys Glu Ala Gln Arg Gln	
165 170 175	
ttt cca aac aga agc aag agg tgg aac cct cca cgt agc gag ggg ctc	576
Phe Pro Asn Arg Ser Lys Arg Trp Asn Pro Pro Arg Ser Glu Gly Leu	
180 185 190	
cct gct ggt cac cac caa ggg cat ttg gtt gcc aag ctc cag ctt tga	624
Pro Ala Gly His His Gln Gly His Leu Val Ala Lys Leu Gln Leu	
195 200 205	
agaaccaaatt taagctacca tgaaaagaag aggaaaagtg agggaaacagg aaggttggga	684
ttctctgtgc agagactttg gttccccacg caagccctgg ggcttggaag aagcacatga	744
ccgtactctg cgtggggctc cacctcacac ccaccctgg gcattcttagg actggagggg	804
ctccttggaa aactggaaga agtctcaaca ctgtttcttt ttca	848

<210> 36  
 <211> 207  
 <212> PRT  
 <213> Homo sapiens

<400> 36  
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 Glu Met Lys Leu Lys Gly Lys Pro Asp Gly Ser Phe Leu Val Arg Asp  
 20 25 30

Ser Ser Asp Pro Arg Tyr Ile Leu Ser Leu Ser Phe Arg Ser Gln Gly  
           35                                  40                                  45  
 Ile Thr His His Thr Arg Met Glu His Tyr Arg Gly Thr Phe Ser Leu  
       50                                  55                                  60  
 Trp Cys His Pro Lys Phe Glu Asp Arg Cys Gln Ser Val Val Glu Phe  
   65                                  70                                  75                                  80  
 Ile Lys Arg Ala Ile Met His Ser Lys Asn Gly Lys Phe Leu Tyr Phe  
                                   85                                  90                                  95  
 Leu Arg Ser Arg Val Pro Gly Leu Pro Pro Thr Pro Val Gln Leu Leu  
                                   100                                  105                                  110  
 Tyr Pro Val Ser Arg Phe Ser Asn Val Lys Ser Leu Gln His Leu Cys  
                                   115                                  120                                  125  
 Arg Phe Arg Ile Arg Gln Leu Val Arg Ile Asp His Ile Pro Asp Leu  
   130                                  135                                  140  
 Pro Leu Pro Lys Pro Leu Ile Ser Tyr Ile Arg Lys Phe Tyr Tyr Tyr  
  145                                  150                                  155                                  160  
 Asp Pro Gln Glu Glu Val Tyr Leu Ser Leu Lys Glu Ala Gln Arg Gln  
                                   165                                  170                                  175  
 Phe Pro Asn Arg Ser Lys Arg Trp Asn Pro Pro Arg Ser Glu Gly Leu  
                                   180                                  185                                  190  
 Pro Ala Gly His His Gln Gly His Leu Val Ala Lys Leu Gln Leu  
   195                                  200                                  205

<210> 37

<211> 464

<212> DNA

<213> Mus musculus

<400> 37

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 ctctatgaag aggttttaag aatgaatgag attctagaac cagcagctaa tcaggatgga 180  
 gaaaccagca aggccacctg acacaggtcc ttttaattctg tttagtcaca aaagacggct 240  
 tgtgtgactg tttggatttg gtgatcaaat gtccatgttt acagttgctt ttcccagttt 300  
 gtgtctttcc caatattgtg aaccttatcc atcttgctt actcagtttt atttctagtg 360  
 cactttgttg tgtattattt gtttacctga ccattttcta ctttattctg ctaataaact 420  
 gtaattctga aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaa 464

<210> 38  
 <211> 747  
 <212> DNA  
 <213> Homo sapiens

<400> 38  
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 tttcgggtgta gaagtggcag cacggcagac tggtaaaca aatggatttt acagaggctt 120  
 acgcggacac gtgctctaca gttggacttg ctgccaggga aggcaatgtt aaagtcttaa 180  
 ggaaactgct caaaaagggc cgaagtgtcg atgttgctga taacagggga tggatgccaa 240  
 ttcatagaag agcttatcac aactctgtag aatgtttgca aatgttaatt aatgcagatt 300  
 catctgaaaa ctacattaag atgaagacct ttgaaggttt ctgtgctttg catctcgctg 360  
 caagtcaagg acattggaaa atcgtacaga ttcttttaga agctggggca gatcctaattg 420  
 caactacttt agaagaaacg acaccattgt ttttagctgt tgaaaatgga cagatagatg 480  
 tgtaaggct gttgcttcaa cacggagcaa atgttaattg atccattct atgtgtggat 540  
 ggaactcctt gcaccaggct tcttttcagg aaaatgctga gatcataaaa ttgcttctta 600  
 gaaaaggagc aaacaaggaa tgccaggatg actttggaat cacaccttta tttgtggctg 660  
 ctcatgatgg ccaagctaga aagctttgaa gcatacttat ttcacccggg tgcaaattgc 720  
 aattgtcaag ccttggacaa agctacc 747

<210> 39  
 <211> 1018  
 <212> DNA  
 <213> Homo sapiens

<400> 39  
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 gtgacactgg gctaaacaaa gtaagtcctt gtttactcag cagtgttttg gggacatgaa 120  
 ggattgccta gaaatattac tccggaatgg tctacagccc agacgccag gcgtgccttg 180  
 tttttggatt cagttctcct gtgtgcatgg ctttccaaaa ggaggtggag ctgtagttct 240  
 ttggaattgt gaacattctt ttgaaatatg gagcccagat aaatgaactt catttggcat 300  
 actgcctgaa gtacgagaag ttttcgatat ttcgctactt tttgaggaaa ggttgctcat 360  
 tgggaccatg gaaccatata tatgaatttg taaatcatgc aattaaagca caagcaaaat 420  
 ataaggagtg gttgccacat cttctggttg ctggatttga cccactgatt ctactgtgca 480  
 attcttggat tgactcagtc agcattgaca cccttatctt cactttggag tttactaatt 540

ggaagacact tgcaccagct gttgaaagga tgctctctgc tcgtgcctca aacgcttgga 600  
 ttctacagca acatattgcc cactgttcca tcctgaccc atctttgtcg tttggaaatt 660  
 cgggtccagtc taaaatcaga acgtctacgg tctgacagtt atattagtca gctgccactt 720  
 cccagaagcc tacataatta tttgctctat gaagacgttc tgaggatgta tgaagttcca 780  
 gaactggcag ctattcaaga tggataaatc agtgaaacta cttaacacag ctaatttttt 840  
 tctctgaaaa atcatcgaga caaaagagcc acagagtaca agttttttatg attttatagt 900  
 caaaagatga ttattgattg tcagataggt taggttttgg ggggccagta gttcagtgag 960  
 aatgtttatg tttacaacta gccttcccag taaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1018

<210> 40  
 <211> 1897  
 <212> DNA  
 <213> Mus musculus

<400> 40  
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 tggccctgga catgratgat gggaccttaa gtttcatcgt ggatggacag tacatgggag 180  
 tggctttccg gggactcaag ggtaaaaagc tgtatcctgt agtgagtgcc gtctggggcc 240  
 actgtgagat ccgcatgcgc tacttgaacg gacttgatcc tgagccccctg ccatcatggt 300  
 acctgtgccg gcgttcggtg cgccctagcgc tgggaaaaga gcgcctgggt gccatccccg 360  
 ctctgccgct acctgcctcc ctcaaagcct acctcctcta ccagtgatcc acatcccagg 420  
 accgccatac gacagccatc tggtgccaar tcaactgagcc cgttgggggtc cgccgacccc 480  
 tgcgcctggg atggaagccc acctcagcca tgggcagacg tgccccctca tcctaccggc 540  
 tgccctctgct ggggggaacct atgccaacgg acttctccct tcccaacact ggctgaagca 600  
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 ggcgccttct gctctcaggt ggagtgggct gccccccact ctctgcagag agaggctaca 720  
 cccacctggg gggtcctggg aggtaaagact agtaggaggt gccagggctg artccaaaag 780  
 caggaatggc caggamcagg ccatacagat gaagctcagg atgtcacata ccatggacam 840  
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 tgcmggtgct ctgtggcctg tatttattct ttaaacagta gcaaaggcca tttatttatt 960  
 ccacttagaa aggaaacctt ggtgggtggy ttccctcgat gtgctttccc ccacctccct 1020

ggaatgtgtg tgccacacct gtccttgtcc caggccagga ctgtggcaca tgagctggtg 1080  
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 ccaagcacca gagcagaccc caagagaggg ccgtgcaagt ccccatgtcc ccaggtccct 1200  
 gcttctgttg ccttgggact catacaccgg cacacgtgtt tcagcctctt gacttccatg 1260  
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 ggcctggagg gcattaggac acatggaatg agtgggggtct ccagcccctg ggaaagccac 1380  
 tggcaaggca ggattagaaa gaccaagagc aggggtggggc gccatgaagc ctgtatgcct 1440  
 ctcaggctca agaccccgcc acacaccac tcaagcctca gaagtgggtg gtagggcagc 1500  
 cccaggagag gaatgcctgt cctagcagca cgtacatgga gcaccccaca tgtgctccag 1560  
 ccctctgggt gtttctcttg ctctagaatc aactccctac attgggaatg tagccatttg 1620  
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 ctgagttctg ctcatctctg cacaggtaca atagatgact tkatttggtg aaaaatgktt 1860  
 aatatattta cmtatatata tatttgtaag aagcatt 1897

<210> 41  
 <211> 134  
 <212> PRT  
 <213> Mus musculus

<220>  
 <221> UNSURE  
 <222> (45)  
 <223> Xaa is unsure

<400> 41  
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 Gln Pro Ser Lys Thr Tyr Pro Ala Phe Leu Glu Pro Asp Glu Thr Phe  
 20 25 30  
 Ile Val Pro Asp Ser Phe Phe Val Ala Leu Asp Met Xaa Asp Gly Thr  
 35 40 45  
 Leu Ser Phe Ile Val Asp Gly Gln Tyr Met Gly Val Ala Phe Arg Gly  
 50 55 60  
 Leu Lys Gly Lys Lys Leu Tyr Pro Val Val Ser Ala Val Trp Gly His  
 65 70 75 80



tgcggtgggg cagtgttttc caataaagaa ttgtagtggc cgacactctc cagggccttc 660  
 atctaaaaga aagattcata tcagtgaact catgttagat aagtgccctt tcccacctcg 720  
 ctcagattta gccttttaggt ggcattttat taaacgacac actgttccta tgagtcccaa 780  
 ctcagatgaa tgggtgagtg cagacctgtc tgagaggaaa ctgagagatg ctcagctgaa 840  
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 cataactgcc aacagtgcct cgtgtacagg tggtcacata actgggttcta tgatgaactt 960  
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 cctccttcag atcagtaaca atccgtgcta ctgggggtgtc atggacaaat atgcagccga 1200  
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 ttgtaattgt acgacttacg atggcatcga tgcccttccc attccttcgc ctatgaaatt 1560  
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 gcagcagtga tgcggagagg ttagaatgtc gacctgcata catattttca tttaatatatt 1680  
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 ccctaagttt taattccaga tcaatttatt ttttttatga tacacttggt atatattttt 1800  
 aagcaggtgt ttggttttgt ttttaccata taaatttaca tatgggtccag gcatatttac 1860  
 aatttcaagg cattgcatat acatttgaat attctgtatt ttttaaataa tcttttggtc 1920  
 tttcctatgt gtgaaatatt ttgctaactc atgctatcag tattcttgta tgaccgaata 1980  
 gttacctatt ctcttttcat cttgaagatt ttcagtaaag agtggtgtaa tcaatccatt 2040  
 ataagttaat tgacttttgt aatttgccaa taggagtgtt aaacaacaaa atgatttaaa 2100  
 atgaaactta atgtattttc attttaaata ttaactaaac caagtttggt tgtagttat 2160  
 tctagccaat aagaaaagag aatgtagcat cctagaggtg tatttgttct gcagtttggc 2220  
 aggaccgtca gttagtccaa ataaacatcc cctcagcgtg gaggcgaatg gaacctgtgc 2280



tcctttctta cgggaagctt tgcaaagcaa aatagcaggg ttacaagctt ggagttgtta 2340  
aggcaactag agttttctct attaatttat agactgttgt tgcacctact tagctctttt 2400  
ttgggaactc tagttcccag gggaaaatac ctcgtgcc 2438

<210> 44  
<211> 542  
<212> PRT  
<213> Mus musculus

<220>  
<221> UNSURE  
<222> (94)  
<223> Xaa is unsure

<400> 44  
Ser Gly Gly Gly Pro Trp Arg Ala Gly Gly Gly Ser Gly Lys Ser Asp  
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Ser Gly Leu Thr Val Glu Pro Gly Arg Gly Leu Thr Ala Arg Pro Pro  
20 25 30  
Pro Gly Gly Ser Arg Thr Arg Ser Gly Ser Gly Arg Ala Ser Leu Pro  
35 40 45  
Arg Leu Ser Glu Arg Arg Val Met Ala Val Val Met Ala Ala Gly Ala  
50 55 60  
Arg Thr Ala Pro Leu Glu Leu Ser Ser Glu Arg Ser Val Gln Lys Val  
65 70 75 80  
Pro Arg Arg Asn Phe Leu Leu Glu Lys Leu Lys Asn Thr Xaa Phe Ile  
85 90 95  
Thr Leu Glu Ile Val Lys Asn Leu Phe Lys Met Ala Glu Asn Asn Ser  
100 105 110  
Lys Asn Val Asp Val Arg Pro Lys Thr Ser Arg Ser Arg Ser Ala Asp  
115 120 125  
Arg Lys Asp Gly Tyr Val Trp Ser Gly Lys Lys Leu Ser Trp Ser Lys  
130 135 140  
Lys Ser Glu Ser Cys Ser Glu Ser Glu Ala Ile Gly Thr Val Glu Asn  
145 150 155 160  
Val Glu Ile Pro Leu Arg Ser Gln Glu Arg Gln Leu Ser Cys Ser Ser  
165 170 175  
Ile Glu Leu Asp Leu Asp His Ser Cys Gly His Arg Phe Leu Gly Arg  
180 185 190

Ser Leu Lys Gln Lys Leu Gln Asp Ala Val Gly Gln Cys Phe Pro Ile  
 195 200 205  
 Lys Asn Cys Ser Gly Arg His Ser Pro Gly Leu Pro Ser Lys Arg Lys  
 210 215 220  
 Ile His Ile Ser Glu Leu Met Leu Asp Lys Cys Pro Phe Pro Pro Arg  
 225 230 235 240  
 Ser Asp Leu Ala Phe Arg Trp His Phe Ile Lys Arg His Thr Val Pro  
 245 250 255  
 Met Ser Pro Asn Ser Asp Glu Trp Val Ser Ala Asp Leu Ser Glu Arg  
 260 265 270  
 Lys Leu Arg Asp Ala Gln Leu Lys Arg Arg Asn Thr Glu Asp Asp Ile  
 275 280 285  
 Pro Cys Phe Ser His Thr Asn Gly Gln Pro Cys Val Ile Thr Ala Asn  
 290 295 300  
 Ser Ala Ser Cys Thr Gly Gly His Ile Thr Gly Ser Met Met Asn Leu  
 305 310 315 320  
 Val Thr Asn Asn Ser Ile Glu Asp Ser Asp Met Asp Ser Glu Asp Glu  
 325 330 335  
 Ile Ile Thr Leu Cys Thr Ser Ser Arg Lys Arg Asn Lys Pro Arg Trp  
 340 345 350  
 Glu Met Glu Glu Glu Ile Leu Gln Leu Glu Ala Pro Pro Lys Phe His  
 355 360 365  
 Thr Gln Ile Asp Tyr Val His Cys Leu Val Pro Asp Leu Leu Gln Ile  
 370 375 380  
 Ser Asn Asn Pro Cys Tyr Trp Gly Val Met Asp Lys Tyr Ala Ala Glu  
 385 390 395 400  
 Ala Leu Leu Glu Gly Lys Pro Glu Gly Thr Phe Leu Leu Arg Asp Ser  
 405 410 415  
 Ala Gln Glu Asp Tyr Leu Phe Ser Val Ser Phe Arg Arg Tyr Ser Arg  
 420 425 430  
 Ser Leu His Ala Arg Ile Glu Gln Trp Asn His Asn Phe Ser Phe Asp  
 435 440 445  
 Ala His Asp Pro Cys Val Phe His Ser Pro Asp Ile Thr Gly Leu Leu  
 450 455 460  
 Glu His Tyr Lys Asp Pro Ser Ala Cys Met Phe Phe Glu Pro Leu Leu  
 465 470 475 480  
 Ser Thr Pro Leu Ile Arg Thr Phe Pro Phe Ser Leu Gln His Ile Cys  
 485 490 495

Arg	Thr	Val	Ile	Cys	Asn	Cys	Thr	Thr	Tyr	Asp	Gly	Ile	Asp	Ala	Leu
			500					505					510		
Pro	Ile	Pro	Ser	Pro	Met	Lys	Leu	Tyr	Leu	Lys	Glu	Tyr	His	Tyr	Lys
		515					520					525			
Ser	Lys	Val	Arg	Leu	Leu	Arg	Ile	Asp	Val	Pro	Glu	Gln	Gln		
	530					535					540				

<210> 45  
 <211> 5000  
 <212> DNA  
 <213> Mus musculus

<400> 45  
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 tggaaagtcc ttacttcagg aaggttgga gatgaggagc aagggaacat tttatcagga 180  
 ctgccacaaa ggagtctttt tttttaatgg tttttcaaga cagggtttct ctgtatagcc 240  
 ctggctgtcc tggagctcac tttgtagacc aggctggcct cgaactcaga aattcgctg 300  
 cctctgcctc ctgagtgtg ggattaaagg cgtgcagcac catgtccaac tggcattttc 360  
 tcaattaagg ttcgttcctt tcagataact ctaggttctg ggtcaagctg acacaaggct 420  
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 aacttatgca catttgtgag cttccacttg ggagtgggaa cctgaactgg gtcctctgca 540  
 agagcagccg tgctcttaac tgctgagcca tttcagcagc ctcacatcag aattaagtta 600  
 gaaattagcc gggatatgaat cataccctta gaatcctagc atctgaaagc agagctaaga 660  
 gaaacaggga ttcaagacca gctcttggt acagagcccg tctgtccta ggatgggcta 720  
 caagagacta tttcaaagcc atccaaacaa caataactac aacaacaaca aggttaaaat 780  
 taggctgggc acaggttaca cacctttaat gccaacactc aggaggcaga ggcaggctga 840  
 tcagtgtgag tttgagttca acgtggtcta catagggagt tctaggccag cagaggttac 900  
 agtctctctc tctctctctc tctctctctc tctctcacac acacacacac acacacacac 960  
 acacacacac acacacacgg tggcattatg ggattttttt gggataaggt ttctctgtct 1020  
 agccctggca tagattcact ctgtagacta ggctagcctt gaactcagag atccgctg 1080  
 ctctgcctcc caagtgtggt gattataggt gttgcaccac cactgccag ccactttggg 1140  
 atttttgaac tgttatcaag aggccttcga ggaggtcaaa cttcaacagc aacctctcca 1200

tgataatgta gctaatagatc aaacgacact caaaacttaa cccttaaagc acacatccac 1260  
 cagacagcgt gccactcgt agttccatta ctcaggaggc tgaagcagga ggatgaagga 1320  
 ctaaggcttc agcaacctag ggagccgcag gggacagtag tctcaatccc tacattctcc 1380  
 tgaacacagg agcaggagtt caggaagggg gtcaaggccg cttactgatc ttagggcctc 1440  
 aggaatgact agctcaggca gagagagcaa aggtctccag tggagaagtc tacacacaca 1500  
 cacacacaca cacacacaca cacacacaca cagaatccaa ggcgatgacg tcatcaaagg 1560  
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 <211> 264  
 <212> PRT  
 <213> Mus musculus

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 35 40 45  
 Asn Pro Lys Asp Cys Ser Glu Asn Ile Asp Val Lys Glu Gly Gly Leu  
 50 55 60  
 Cys Phe Glu Arg Arg Pro Val Ala Gln Ser Thr Asp Gly Val Arg Gly  
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 Lys Arg Gly Tyr Ser Arg Gly Leu His Ala Trp Glu Ile Ser Trp Pro  
 85 90 95  
 Leu Glu Gln Arg Gly Thr His Ala Val Val Gly Val Ala Thr Ala Leu  
 100 105 110  
 Ala Pro Leu Gln Ala Asp His Tyr Ala Ala Leu Leu Gly Ser Asn Ser  
 115 120 125  
 Glu Ser Trp Gly Trp Asp Ile Gly Arg Gly Lys Leu Tyr His Gln Ser  
 130 135 140  
 Lys Gly Leu Glu Ala Pro Gln Tyr Pro Ala Gly Pro Gln Gly Glu Gln  
 145 150 155 160  
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 165 170 175

Thr Leu Gly Tyr Ser Ile Gly Gly Thr Tyr Leu Gly Pro Ala Phe Arg  
 180 185 190  
 Gly Leu Lys Gly Arg Thr Leu Tyr Pro Ser Val Ser Ala Val Trp Gly  
 195 200 205  
 Gln Cys Gln Val Arg Ile Arg Tyr Met Gly Glu Arg Arg Val Glu Glu  
 210 215 220  
 Pro Gln Ser Leu Leu His Leu Ser Arg Leu Cys Val Arg His Ala Leu  
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<212> PRT  
<213> Homo sapiens

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Leu Ser Ala Pro Pro Pro Asp Leu Gly Ala Gln Arg Arg His Gly Trp  
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 Asn Pro Lys Asp Cys Ser Glu Asn Ile Glu Val Lys Glu Gly Gly Leu  
           50                                  55                                  60  
 Tyr Phe Glu Arg Arg Pro Val Ala Gln Ser Thr Asp Gly Ala Arg Gly  
       65                                  70                                  75                                  80  
 Lys Arg Gly Tyr Ser Arg Gly Leu His Ala Trp Glu Ile Ser Trp Pro  
                                   85                                  90                                  95  
 Leu Glu Gln Arg Gly Thr His Ala Val Val Gly Val Ala Thr Ala Leu  
                   100                                  105                                  110  
 Ala Pro Leu Gln Thr Asp His Tyr Ala Ala Leu Leu Gly Ser Asn Ser  
           115                                  120                                  125  
 Glu Ser Trp Gly Trp Asp Ile Gly Arg Gly Lys Leu Tyr His Gln Ser  
       130                                  135                                  140  
 Lys Gly Pro Gly Ala Pro Gln Tyr Pro Ala Gly Thr Gln Gly Glu Gln  
   145                                  150                                  155                                  160  
 Leu Glu Val Pro Glu Arg Leu Leu Val Val Leu Asp Met Glu Glu Gly  
                   165                                  170                                  175  
 Thr Leu Gly Tyr Ala Ile Gly Gly Thr Tyr Leu Gly Pro Ala Phe Arg  
           180                                  185                                  190  
 Gly Leu Lys Gly Arg Thr Leu Tyr Pro Ala Val Ser Ala Val Trp Gly  
           195                                  200                                  205  
 Gln Cys Gln Val Arg Ile Arg Tyr Leu Gly Glu Arg Arg Ala Glu Pro  
       210                                  215                                  220  
 His Ser Leu Leu His Leu Ser Arg Leu Cys Val Arg His Asn Leu Gly  
   225                                  230                                  235                                  240  
 Asp Thr Arg Leu Gly Gln Val Ser Ala Leu Pro Leu Pro Pro Ala Met  
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 Lys Arg Tyr Leu Leu Tyr Gln  
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<211> 28

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Primer

<400> 49

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<210> 50  
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36

<210> 51  
<211> 128  
<212> PRT  
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<223> Xaa is any amino acid residue

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<222> (3)  
<223> Xaa is Pro, Thr or Ser

<220>  
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<400> 51  
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 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 20 25 30  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 35 40 45  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 50 55 60  
 Xaa Xaa Xaa Xaa Xaa Xaa Pro Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 65 70 75 80

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
85 90 95

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
100 105 110

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
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<210> 52

<211> 34

<212> PRT

<213> Mus musculus or Rattus norvegicus

<400> 52

Val Arg Pro Leu Gln Glu Leu Cys Arg Gln Arg Ile Val Ala Ala Val  
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Gly Arg Glu Asn Leu Ala Arg Ile Pro Leu Asn Pro Val Leu Arg Asp  
20 25 30

Tyr Leu

<210> 53

<211> 32

<212> PRT

<213> Mus musculus

<400> 53

Ala Pro Thr Leu Gln His Phe Cys Arg Leu Ala Ile Asn Lys Cys Thr  
1 5 10 15

Gly Thr Ile Trp Gly Leu Pro Leu Pro Thr Arg Leu Lys Asp Tyr Leu  
20 25 30

<210> 54

<211> 33

<212> PRT

<213> Mus musculus

<400> 54

Val Ala Thr Leu Gln His Leu Cys Arg Lys Thr Val Asn Gly His Leu  
1 5 10 15

Asp Ser Tyr Glu Lys Val Thr Gln Leu Pro Gly Pro Ile Arg Glu Phe  
20 25 30

Leu

<210> 55

<211> 34  
<212> PRT  
<213> Homo sapiens

<400> 55  
Val Arg Pro Leu Gln Glu Leu Cys Arg Gln Arg Ile Val Ala Thr Val  
1 5 10 15  
Gly Arg Glu Asn Leu Ala Arg Ile Pro Leu Asn Pro Val Leu Arg Asp  
20 25 30  
Tyr Leu

<210> 56  
<211> 34  
<212> PRT  
<213> Mus musculus

<400> 56  
Val Pro Ser Leu Gln His Ile Cys Arg Met Ser Ile Arg Arg Val Met  
1 5 10 15  
Ser Thr Gln Glu Val Gln Lys Leu Pro Val Pro Ser Lys Ile Leu Ala  
20 25 30  
Phe Leu

<210> 57  
<211> 34  
<212> PRT  
<213> Mus musculus

<400> 57  
Pro Phe Ser Leu Gln Tyr Ile Cys Arg Ala Val Ile Cys Arg Cys Thr  
1 5 10 15  
Thr Tyr Asp Gly Ile Asp Gly Leu Pro Leu Pro Ser Met Leu Gln Asp  
20 25 30  
Phe Leu

<210> 58  
<211> 37  
<212> PRT  
<213> Mus musculus

<400> 58  
Pro Arg Thr Leu Leu Ser Leu Cys Arg Val Ala Val Arg Arg Ala Leu  
1 5 10 15



Gly Lys Tyr Arg Leu His Leu Val Pro Ser Leu Pro Leu Pro Asp Pro  
                   20                  25                  30

Ile Lys Lys Phe Leu  
                   35

<210> 59  
 <211> 37  
 <212> PRT  
 <213> Mus musculus

<400> 59  
 Pro Arg Ser Leu Gln His Leu Cys Arg Cys Ala Leu Arg Ser His Leu  
       1                  5                  10                  15

Glu Gly Cys Leu Pro His Ala Leu Pro Arg Leu Pro Leu Pro Pro Arg  
                   20                  25                  30

Met Leu Arg Phe Leu  
                   35

<210> 60  
 <211> 34  
 <212> PRT  
 <213> Homo sapiens

<400> 60  
 Val Arg Ser Leu Gln Tyr Leu Cys Arg Phe Val Ile Cys Gln Tyr Thr  
       1                  5                  10                  15

Arg Ile Asp Leu Ile Gln Lys Leu Pro Leu Pro Asn Lys Met Lys Asp  
                   20                  25                  30

Tyr Leu

<210> 61  
 <211> 37  
 <212> PRT  
 <213> Mus musculus

<400> 61  
 Pro Arg Pro Leu Ala His Leu Cys Arg Leu Arg Val Arg Lys Ala Ile  
       1                  5                  10                  15

Gly Lys Tyr Arg Ile Lys Leu Leu Asp Thr Leu Pro Leu Pro Gly Arg  
                   20                  25                  30

Leu Ile Arg Tyr Leu  
                   35

<210> 62  
 <211> 34  
 <212> PRT  
 <213> Homo sapiens

<400> 62  
 Val Lys Ser Leu Gln His Leu Cys Arg Phe Arg Ile Arg Gln Tyr Thr  
   1                  5                  10                  15  
 Arg Ile Asp His Ile Pro Asp Leu Pro Leu Pro Lys Pro Leu Ile Ser  
                   20                  25                  30  
 Tyr Ile

<210> 63  
 <211> 40  
 <212> PRT  
 <213> Mus musculus

<400> 63  
 Val Pro Ser Leu Thr His Leu Cys Arg Leu Glu Ile Arg Ala Ser Leu  
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 Lys Ala Glu His Leu His Ser Asp Ile Phe Ile His Gln Leu Pro Leu  
                   20                  25                  30  
 Pro Arg Ser Leu Gln Asn Tyr Leu  
                   35                  40

<210> 64  
 <211> 37  
 <212> PRT  
 <213> Mus musculus

<400> 64  
 Pro Leu Pro Leu Met Asp Leu Cys Arg Arg Ser Val Arg Leu Ala Leu  
   1                  5                  10                  15  
 Gly Lys Glu Arg Leu Gly Ala Ile Pro Ala Leu Pro Leu Pro Ala Ser  
                   20                  25                  30  
 Leu Lys Ala Tyr Leu  
                   35

<210> 65  
 <211> 34  
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 <213> Mus musculus

<400> 65  
 Pro Phe Ser Leu Gln His Ile Cys Arg Thr Val Ile Cys Asn Cys Thr  
   1                  5                  10                  15

Thr Tyr Asp Gly Ile Asp Ala Leu Pro Ile Pro Ser Pro Met Lys Leu  
20 25 30

Tyr Leu

<210> 66

<211> 37

<212> PRT

<213> Mus musculus

<400> 66

Pro Gln Ser Leu Leu His Leu Ser Arg Leu Cys Val Arg His Ala Leu  
1 5 10 15

Gly Asp Thr Arg Leu Gly Gln Ile Ser Thr Leu Pro Leu Pro Pro Ala  
20 25 30

Met Lys Arg Tyr Leu  
35

<210> 67

<211> 37

<212> PRT

<213> Homo sapiens

<400> 67

Pro His Ser Leu Leu His Leu Ser Arg Leu Cys Val Arg His Asn Leu  
1 5 10 15

Gly Asp Thr Arg Leu Gly Gln Val Ser Ala Leu Pro Leu Pro Pro Ala  
20 25 30

Met Lys Arg Tyr Leu  
35

<210> 68

<211> 34

<212> PRT

<213> Mus musculus

<400> 68

Leu Ser Ser Leu Lys His Leu Cys Arg Lys Ala Leu Arg Ser Phe Leu  
1 5 10 15

Thr Thr Tyr Gln Val Leu Ala Leu Pro Ile Pro Lys Lys Met Lys Glu  
20 25 30

Phe Leu